University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Electronics and Telecommunication
Curriculum Scheme: Rev2016
Examination: Final Year Semester VII
Course Code: ECC701 and Course Name: Microwave Engineering
Time: 1 hour Max. Marks: 50

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Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	Striplines and microstrips are used to:
Option A:	couple sections of waveguide
Option B:	couple waveguides to antennas
Option C:	couple components on a circuit board
Option D:	Couple signals from antenna to space
Q2.	S11 parameter is also known as reflection coefficient at port 1 because,
Option A:	it is the ratio of reflected power by input power
Option B:	it is the ratio of output power by input power
Option C:	it is the ratio of output power by reflected power
Option D:	it is the ratio of input power by output power
Q3.	The equivalent circuit of a parallel wire transmission line consist of
Option A:	L and C
Option B:	R and C
Option C:	R L C and G
Option D:	R and L
Q4.	In which of the following impedance matching method,we need not to calculate distance of the stub from the load
Option A:	Single stub matching
Option B:	Double stub matching
Option C:	Triple stub matching
Option D:	Lumped component matching
Q5.	For analysis of Maxwells equation which of the following is used?
Option A:	Boundary conditions
Option B:	KVL
Option C:	KCL
Option D:	Reciprocity Theorem
Q6.	Forward attenuation provided by a resonance ferrite isolator is:
Option A:	Zero
Option B:	Low
Option C:	High
Option D:	Infinity
Q7.	Dominant mode is defined as:
Option A:	Mode with the lowest cut off frequency
Option B:	Mode with the highest cut off frequency

Option C:	Any TEM mode is called a dominant mode
Option D:	Any TEM mode with highest cut off frequency is called a dominant mode
Q8.	Microwave resonators can be constructed from which structure of waveguide
Option A:	open
Option B:	close
Option C:	short circuited
Option D:	parallel
Q9.	In a rectangular waveguide has dimension of 2.5 x 5 cms, calculate cut off wavelength for its dominant mode.
Option A:	12 cm
Option B:	10.5 cm
Option C:	10 cm
Option D:	5 cm
Q10.	_____ is a three-port microwave device that can be lossless and matched at all ports.
Option A:	Circulator
Option B:	Magic Tee
Option C:	Hybrid junction
Option D:	Isolator
Q11.	For a circular cavity resonator with TM102 mode, diameter 12.5 cm and lentgh 5cm, calculate resonant frequency.
Option A:	6.24 GHz
Option B:	5.67 GHz
Option C:	4.24 GHz
Option D:	12 GHz
Q12.	The attenuator is used in the traveling-wave tube to-----
Option A:	prevent oscillations
Option B:	help bunching
Option C:	prevent saturation
Option D:	increase gain
Q13.	A reflex Klystron operates at 9GHz at the peak n=2 mode with Vo= 600V, Rsh = 20 K Ω , L =1mm.If gap transit time and beam loading are neglected.Find the repeller voltage
Option A:	2500V
Option B:	250V
Option C:	250kV
Option D:	255V
Q14.	_____ is a single cavity klystron tube that operates as on oscillator by using a reflector electrode after the cavity
Option A:	Backward wave oscillator
Option B:	Travelling wave tube

Option C:	Magnetron
Option D:	Reflex Klystron
Q15.	In a magnetron why do the electrons travel in a cycloidal path?
Option A:	The cathode is positive
Option B:	Strong field is supplied by the permanent magnet
Option C:	The anode is negative
Option D:	The cavities are resonant
Q16.	In a _____ oscillator, the RF wave travels along the helix from the collector towards the electron gun
Option A:	Backward wave oscillator
Option B:	Interaction oscillator
Option C:	Magnetron
Option D:	Reflex Klystron
Q17.	HEMT used in the microwave circuit is a
Option A:	Source
Option B:	High power amplifier
Option C:	Low noise amplifier
Option D:	Detector
Q18.	Parametric amplifier is a
Option A:	Low noise amplifier
Option B:	High gain amplifier
Option C:	Low gain amplifier
Option D:	High noise amplifier
Q19.	The resistance of the PIN diode with positive bias voltage
Option A:	Increases
Option B:	Decreases
Option C:	Remains constant
Option D:	Insufficient data
Q20.	To achieve maximum possible efficiency, Varactor diodes are operated in
Option A:	Cut-off region
Option B:	Saturation region
Option C:	Reverse saturation region
Option D:	Active region
Q21.	GaAs is used in the fabrication of GUNN diodes due to
Option A:	Less forbidden energy gap
Option B:	GaAs is cost effective
Option C:	It has low conduction band electrons
Option D:	Is less temperature sensitive

Q22.	The substrate of an MMIC must be a _____ to accommodate the fabrication of all the type of devices.
Option A:	Insulator
Option B:	Semiconductor
Option C:	Metals operable at high frequencies
Option D:	The substrate of an MMIC must be a _____ to accommodate the fabrication of all the type of devices.
Q23.	Partial conductors
Option A:	Loading of a line means
Option B:	Increasing inductance of line
Option C:	Increasing distributed inductance of line
Option D:	Decreasing distributed inductance of line
Q24.	This method is not used for measurement of Q of a cavity resonator.
Option A:	Transmission method
Option B:	Impedance Measurement
Option C:	Calorimetric Technique
Option D:	Transient decay
Q25.	_____ is a micromachining technique where suspended structures are formed on silicon substrates.
Option A:	RF MEMS
Option B:	MMIC
Option C:	HIC
Option D:	Photolithography

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	A
Q3.	C
Q4	B
Q5	A
Q6	B
Q7	A
Q8.	B
Q9.	C
Q10.	A
Q11.	A
Q12.	A
Q13.	B
Q14.	D
Q15.	B
Q16.	A
Q17.	C
Q18.	A
Q19.	B
Q20.	C
Q21.	A
Q22.	B
Q23.	B
Q24.	C
Q25.	B